

CHAPTER 3

The Molecules of Cells

Chapter Objectives

Opening Essay

Explain why lactose intolerance is considered normal in adult humans.

Introduction to Organic Compounds

- 3.1 Explain why carbon is unparalleled in its ability to form large, diverse molecules.
- 3.1 Define organic compounds, hydrocarbons, a carbon skeleton, and an isomer.
- 3.2 Describe the properties of and distinguish between the six chemical groups important in the chemistry of life.
- 3.3 List the four main classes of macromolecules important to life. Explain the relationship between monomers and polymers. Compare the processes of dehydration synthesis and hydrolysis.

Carbohydrates

- 3.4–3.7 Describe the structures, functions, properties, and types of carbohydrate molecules common in the human diet.
- 3.6 Explain how and why high-fructose corn syrup is produced.

Lipids

- 3.8–3.10 Describe the structures, functions, properties, and types of lipid molecules.
- 3.10 Describe the health risks associated with the use of anabolic steroids.

Proteins

- 3.11–3.13 Describe the structures, functions, properties, and types of proteins.
- 3.12 Explain how a protein's shape determines its functions.

Nucleic Acids

- 3.14–3.15 Compare the structures and functions of DNA and RNA, noting similarities and differences.
- 3.16 Describe the adaptive advantage of lactose tolerance in people of East African descent.